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STUDYING OF THE ENGLISH ENVIRONMENTAL PROTECTION TERMINOLOGY IN THE ASPECT OF THEMATIC GROUPS AND HYPER- HYPONYMIC RELATIONS

Abstract

This article deals with one of the best ways of teaching and studying Environmental Protection terminology. In our opinion the researched terminology should be studied in the aspect of thematic groups. Classification into thematic groups makes it easier to memorize terms. Terminology of environmental protection has been divided into eleven thematic groups inside of which lexical-semantic groups are built. Differentiation has been made between thematic and lexical-semantic groups. It has been also offered to study the terminology in the aspect of hyper-hyponymic relations which very often become the basis on which thematic groups are built. It has been found out that every hyponym can be a hyperonym regarding concepts of a lower level, in such a way creating hyper-hyponymic group at a lower degree of generalization.

Keywords: term, terminology, environmental protection, thematic group, lexical-semantic group, hyper-hyponymic relations

For international cooperation to fulfill its tasks concerning environmental protection it is important for specialists in different countries to understand each other and to have a good command of terminology. As English is an international language the specialists in this area should know the terminology which serves environmental protection. In order to do it they are required to learn this terminology very well. One of the ways offered to specialists in order to learn the terminology is the way of its studying in the aspect of thematic groups and hyper-hyponymic relations.

Nowadays English terminology of environmental protection is not sufficiently studied, despite a number of works devoted to the study of ecological terminology. The matter is that environmental protection is only one of the subdivisions of ecology – the science much broader than environmental protection.

Terminology of environmental protection contains terms which are the most typical of environmental protection – names of actions and processes related to environmental protection, names of the factors that are detrimental to the environment, names of methods, techniques and activities aimed at the protection and maintenance of the environment in appropriate state, names of equipment and devices necessary for coping with specific environmental disasters or just for normal environmental conditions of human existence and living organisms, names of characteristics, features, laws, principles related to environmental protection, etc. The researched terminology also includes special words used to refer to the results and consequences of wrong human influence on the environment, names of environmental disasters, names of organizations that contribute to environmental

protection, as well as names of their laws and regulations and so on. Our task is to study thematic groups, into which the researched terms are divided.

The aim of the article – to divide the studied terminology into thematic groups and to study hyper-hyponymic relations on basis of which we have made thematic division. **The subject of the study** – environmental protection terms.

For our research **2565** terms have been taken from Environmental protection terminology. Terms have been taken from such dictionaries: “Dictionary of Environment and Ecology”, P. H. Collin (2004); “Dictionary of Environmental Science”, McGraw-Hill (2005); “The facts on File Dictionary of Ecology and the Environment”, J. Bailey (2004); “Environmental Engineering Dictionary and Directory”, T. M. Pankratz (2001); “Dictionary of Environmental Legal Terms”, C. C. Lee (1997); “The Facts on file Dictionary of weather and climate”, J. Smith (2006); “Oxford Dictionary of Geography”, S. Mayhew (2012); “The New Penguin Dictionary of Biology”, “Dictionary of Chemistry”, electronic ecological dictionaries (Florida Environments Online Thesaurus, GEMEI) and texts on environmental protection.

Systemic organization of terminology lies in the fact that the location of term within terminology is always interdependent by the presence of other terms. That is, “each term occupies a definite place in terminology and has a meaning that does not correspond to the meaning of another term of the same terminological system” (Reformatskiy, 1986, p. 189).

Despite the number of researches done by many linguists English environmental protection terminology within the aspect of thematic groups is currently understudied.

Our research starts with thematic groups of environmental protection terminology. The study of thematic and lexical-semantic groups has been developed in the first half of the twentieth century in the works by F. P. Philin, O. Trubachev, A. A. Ufimtseva, D. N. Shmeliov, V. Levitsky, V. V. Vinogradov and others, who laid the foundation for taxonomic interpretation and were the first who developed their basic concepts and characteristics.

An important and necessary stage in studying the systemic organization of lexicological stock of language and specific terminologies is the study and description of relations of lexical-semantic groups (LSG). Theoretically, any terminology consists of structural groups, units or blocks.

We consider it necessary to offer the classification of the studied terminology based on semantic criteria as it is important for terminological research. Such classification enables identification of thematic and lexical-semantic groups of the studied terminological fund.

Thematic analysis is a universal method of studying terminology; it is the most common method. “Defining thematic groups from terminological fund makes it possible to identify different lexical-semantic processes, reflected in scientific language with the help of terminological units” (Pavlova, 2009, pp. 37-38).

Thus, the concept of thematic group is broader than lexical-semantic group.

In thematic groups relations among terms are built only on external relations among concepts, and according to different classification purposes terms can be united and disunited. Lexical-semantic group is an internal specific phenomenon caused by historical development of language, or, respectively, by special

terminology. Their components can not be classified without destruction of the existing relations among them.

Structure of environmental thematic groups contain terminological units from different terminological systems (ecological, physical, chemical, geographical, etc.), forming the language of environmental protection.

Thematic classification is the first and very important stage in the study of the systemic organization of lexicological units whereas the lexical-semantic classification is the final stage. We agree that “the analysis of a lexical field includes the relationship of words that contrast paradigmatically (all belonging to one part of speech), and those of other parts of speech that are related morphologically and semantically” (Lehrer, 1974). Moreover, “the members of a field must have at least one specific semantic component in common. The definition and delimitation of lexical fields and word-fields – and naturally also of semantic fields – therefore usually depends on the concept of semantic component or semantic feature” (Lipka, 1977).

Environmental protection terms are offered to be divided into 11 major thematic groups inside of which lexical-semantic groups are built:

1) Names of actions and processes: *pollution, deforestation, purification, desalination, radiation, putrefaction, acidification.*

2) Names of factors which do damage to the environment: **A) Names of sources of pollution:** *agricultural industry, nuclear power plant, machine-building plant, metallurgical works, chemical industry, mining complex, hydroelectric power station, stationary source;* **B) Names of disasters:** *earthquake, volcanic eruption, forest fire, oil spill, tsunami, storm, tornado, explosion at nuclear power station, land slide;* **C) Names of kinds of pollution:** *biological pollution, chemical pollution, physical pollution, noise pollution, energy pollution;* **D) Names of pollutants:** *carbon oxide, mercury, volatile contaminant, formaldehyde, intoxicant, pesticides, ammonia, nitric oxide;* **E) Names of contaminated substances and objects:** *black water, raw sewage contaminated sea water, etc.;* and **F) Names of waste:** *scheduled wastes, solid waste, toxic waste, ignitable waste, radioactive waste, liquid waste and others.*

3) Names of methods and ways to protect and keep the environment clean and in proper condition: **A) Methods of Water Purification:** *anaerobic sewage treatment, filtration, distillation, chlorination, treatment system, etc.;* **B) Methods of air purifying:** *ionizer method, photocatalytic filtration, air conditioning, precipitation scavenging;* **C) Methods of soil cleaning:** *postcombustion controls, soil and sediment adsorption isotherm test, pest management;* **D) Methods of waste disposal:** *recycling, landfill, waste burning, waste processing, waste incineration, leachate collection system;* **E) Measures to prevent environmental disasters:** *runoff pollution abatement, discharge limit, emergency plan, environmental audit, Prevention of Significant Deterioration and others;* **F) Measures to maintain the environment in proper condition:** *regulatory clean water monitoring, reforestation, regulating releases, shelterwood cutting, enforcement monitoring, integrated hygienic rating of harmful substances;* **G) Other methods and activities:** *flue gas conditioning, radiation sterilization, etc.*

Lexical-semantic groups “Methods of cleaning”, in their turn, are divided into even smaller subgroups, such as mechanical methods, physical methods, chemical methods, biological methods, etc.

4) Names of instruments and appliances for security, cleaning, problem prevention and maintenance the environment in the proper condition: A) **Sewage treatment plants:** rendering plant, wood waste multiple chamber incinerator, hazardous waste management facility, pretreatment plant, publicly owned treatment works; B) **Devices for water treatment:** sand filter, rotating biological contactor, sediment pond, sludge digester, membrane filtration, vacuum sewer collector flow net; C) **Devices for air cleaning:** dust filters, ionic purifier, adsorption carbon filter, ozone generator, dust collector, impingement separator, light detection and ranging; D) **Devices for cleaning and maintaining the soil in proper condition:** scarifier, soft pesticide, drainway, drain ditch, hydroseparator; E) **Arrangements for waste management:** hazardous waste incinerator, in-line multiple chamber incinerator, landfill gas turbine, modular incinerator; F) **Devices and artificial formations for preventing problems with the environment:** rain gauge, sanitizer, dike, interceptor, open to the atmosphere impoundment; G) **Other devices:** anemometer, device for personal protection of eyes, fire extinguisher, isolating device for personal protection of respiratory organs, ombrometer, oscillometer, protective suit.

5) Names of the objects of the study and objects that need protection and maintenance in proper condition: ecosystem, environment, world waters, fresh water, underground drinking water, community water system, endangered species rainforest.

6) Names of the results and consequences of human bad influence on the environment: shear, erosion, flood, greenhouse effect, city maladour, ozone hole, ozone layer depletion, oil spill, soil depletion, forest fire, biodiversity reduction, glacier thawing.

7) Names of features, characteristics and properties related to the protection of the environment: A) **Characteristics of water:** water aggressiveness, assimilative capacity of the receiving waters; B) **Characteristics of air:** transparency, invisibility, odourless, density, unstable air; C) **Characteristics of soil:** soil permeability, fertility, humidity, soil percolation, soil porosity; D) **Other characteristics:** corrosivity, toxicity, ignitability etc.

8) Names of laws, principles, rules and regulations: river quality standards, secular equilibrium, Beer-Lambert law, discharge standards, emission standard, environmental legislation, land disposal ban and others.

9) Names of parameters, coefficients and values: potency factor, quality factor, radiation absorbed dose (rad), Sax toxicity ratings, stability index (Langelier index), statutory levels of contaminants, water pollution index, diversity index, index of potential inhalation toxicity, Jackson turbidity unit and others.

10) Names of acts and statements concerning environmental protection: Rasmussen report, Kyoto Protocol, Act to Prevent Pollution from Ships, Air Pollution Control Act, Endangered Species Act, Environmental Assessment Act, Water Quality Act, Environmental Impairment Liability Policy, and others.

11) Names of agencies and organizations that contribute to the restoration of the environment: Advanced Environmental Research and Technology national

Science Foundation, Council on Environmental Quality, International Union of Air Pollution Prevention Associations, Spill Action Centre, Reforestation Trust fund and others.

Classification given above is not absolute and may be supplemented by several other thematic groups. This is due to the intensive development of the science and the emergence of new concepts that require names which can not be included into any of the above mentioned thematic groups.

Thus, thematic group – are terms united by one theme. Lexical-semantic group – a group of terms within the thematic group united by a common semantic feature. Lexical-semantic and thematic groups relate to each other as the part and the whole. The study of thematic groups of the given terminology made it possible to see the expression of people's experience related to environmental protection. Lexical-semantic groups are also known as lexical-semantic fields. According to Ullmann: "fields are linguistic realities existing between single words and the total vocabulary; they are parts of a whole and resemble words in that they combine into some higher unit, and the vocabulary in that they resolve themselves into smaller units" (Ullmann, 1957).

Hyponymy is also very important in the study of thematic groups as hyper-hyponymic relations are often those which help to build thematic groups. Therefore, the study of hyper-hyponymic relations is also the part of our research.

Our task is to systemize collected material in order to see connection and relations among concepts. For creating hyper-hyponymic groups a large number of English texts on environmental protection have been worked out, definitions of terms and the existing classifications have been used. Also the structural features of terms-hyponyms have been analyzed.

Hyponymy helps to organize elements of the semantic field hierarchically based on hyper-hyponymic relations with the help of which there is a union of lexical items into thematic, lexical-semantic groups and fields. "Hierarchy is one of the major principles used to structure terminologies. In practice, many terminologies use different kinds of relations to create "hierarchies", reflecting their organizational principles for a given purpose. Strictly, hierarchy is based on a relation of dominance that comprises the taxonomic relation ('is a') and the meronymic relation ('part of')" (Bodenreider, Burgun & Rindflesch, 2001).

Hierarchical logical relations among concepts lie in the basis of hyponymic relations, so each class is species in regard to a higher concept in hierarchical chain and genus in regard to classes below (Pavlova, 2009). The relations among terms-hyponyms is a "certain kind of opposition based on their common categorical features" (Panko, Kochan & Matsuik, 1994, p. 192).

Therefore, every hyponym can be a hyperonym regarding concepts of a lower level, that is it creates hyper-hyponymic group at a lower degree of generalization. In such a way, "a subordinate at a given level can itself be a hyponym at a higher level" (Griffiths, 2006).

Comparing the meanings of hyperonym and hyponym, hyponym has the larger number of semantic components.

Hyponym contains larger set of species features in its structure. It is explained by the fact that hyponym contains semantic content of hyperonym and homogeneous hyponyms are opposed to each other by certain distinctive senses.

Lyons further distinguishes proper hyponymy from quasi-hyponymy. For Lyons “quasi-hyponymy” is a relation of hierarchical lexical structure. It differs from proper hyponymy in that superordinate terms, i.e. archilexemes, are lacking and have to be replaced by general words of a different word-class (Lyons, 1977).

It is considered that hyponymy plays primarily a function of term systematization and interpretation of meanings. With the help of generic feature the meaning is generalized, the feature of species, however, specifies the meaning.

The carried out analysis shows that the terminology of environmental protection is characterized by concepts which by developing and becoming complicated acquire new features and characteristics. This process leads to “emergence of more specific species concepts expressed by terminological word-combinations that reflect the required distinctive features most accurately” (Chernyshova, 2009). Moreover, with the development of the industry specific concepts tend to turn into generic concerning forming species concepts. This means that the same concept in the system of hyper-hyponymic relations can be both specific and generic simultaneously, depending on the level of the study.

Therefore, a special feature of environmental protection terminology is its characteristics by multi-leveled hyper-hyponymic groups that can be delayed to the smallest indivisible semantic structure, and the concepts of the lower levels are often borrowed from related branches. Terminology of environmental protection is a complex branch, which includes such sub-branches as protection of water, air, soil, flora, fauna, preventing ecological disasters etc. It means that such a unique synthesis of sciences finds its reflection in the content of the researched area, indicating partly interdisciplinary nature of hyper-hyponymic relations in the given terminology.

Conclusions. Having done research of environmental protection terminology we have reached such conclusions. Division of terminology into thematic groups makes it possible and easier to learn the terms very well which is necessary for understanding specialists from different countries in order to cooperate for common solution to different ecological and environmental problems and catastrophes. Making thematic classification we base ourselves on logical, external criterion, which enabled us to organize terms on the basis of semantic similarity. Therefore, 11 major thematic groups have been singled out inside of which lexical-semantic groups are built based on the most important, in our view, common semantic features – semes. It has been found out that among 11 thematic groups the largest ones are those which represent “names of factors which do damage to the environment” and “names of instruments and appliances for security, cleaning, problem prevention and maintenance the environment in the proper condition. It has been confirmed that hyper-hyponymic relations often lie in the basis of building thematic groups. Hyponymy plays primarily a function of term systematization and interpretation of meanings.

The prospect for the future research is the studying of paradigmatic relations which exist in the terminological system of environmental protection.

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